THE FRUITING SEASON OF THE HAIR-CAP MOSS.

PHEBE M. TOWLE AND ANNA E. GILBERT.

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In March, 1903, a group of students in the laboratory of the University of Vermont were giving attention to the hair-cap moss. The material had been brought from different stations, and in it were found plants with the rosettes having well developed antheridia; plants with tufts of green leaves at the top, showing apparently only last year's growth; plants having sporophytes of good height and usually retaining the hairy cap; and others with the sporophytes rising only from one-half to three-fourths of an inch above the tuft of leaves. As the observations went on these questions arose: first, where are the archegonia with the egg cells which should be ready for the sperm? second, how old are these sporophytes? third, when do these sporophytes mature their spores? Following the suggestions of the questions these observations have been noted.

On March 24th the antheridial plants showed the antheridia with the contents retained, the sperm mother cells showing through the walls. April 16th the antheridia were discharging their contents. The sperm mother cells were massed together and appeared nearly square as seen in section. The motile sperm cells were in very rapid motion. On the same day an anchegonium was found. It was about as tall as the smallest or innermost enclosing leaves. On April 18th two archegonia were found in the same plant. One was about the size of the one found two days earlier and the other was two and one-half times as tall as the first. The shorter archegonium had a rounded top apparently unopened, while the taller one was somewhat funnel shaped above probably indicating the mature condition of the archegonium when it is open ready to receive the sperm cells. Many plants were examined in which no archegonia were found.

In the last week of July the hairy cap showed in a dissected specimen. It was during the third week in August that the first little hair-cap peeped out of its tuft of green leaves. One week latter the same little plant was showing plainly. On October 12th the sporophytes were showing a half-inch above the leaves. Some of these plants were brought in and kept in a cool place and two months later had added, in some plants, another half-inch to their height.

The second question,—how old are the sporophytes which are present in the spring, has been answered in part by the reports just given of the development of the plant through the season. But this will be made still more clear by observations of next spring upon plants in marked stations, of which the autumn conditions were made matters of careful record.

The third question,—when do these sporophytes ripen their spores, takes us on to August. The greater number of sporophytes of *P. juniperinum* had by August 21st shed their hairy caps, but some still retained them. The lids were in place but came off easily when disturbed and the spores could be pushed or shaken out. The sporophytes looked fresh. The capsules and spores were green in color. The plants from which they grew showed no

indications of this year's growth other than the sporophytes themselves, while the other plants nearby showed the new year's growth distinctly. *Polytrichum commune* found by the roadside a little way west of Hazen's Notch on July 21st was apparently as far advanced as *P. juniperinum* found in the Missisquoi Valley on August 21st.

This year's observation would indicate that for these two species of haircap moss the escape of the sperm cells and the maturing of the archegonium for their reception occurs in April, and that the maturing of the spores within the sporophyte takes place one year from the following August. The early stages of the development of the sporophyte progress rather slowly. Later, in July and August, growth seems rapid. Then again in the fall growth is slower. Let those who wish to get motile sperms search in April for male rosettes in which the white tips of the antheridia may be seen just peeping out from between the scales of the rosette, if one looks carefully with a good glass. Let such plants dry slightly, then by wetting them for mounting they will show the discharge of the sperm mother cells.

When the interest in the subject began to deepen a search was made for literature relating to it. Nothing was found until the last volume of Hedwigia came out containing an article by A. Grimme; Ueber die Blüthezeit Deutscher Laubmoose und die Entwickelungsdauer ihrer Sporogone. The length of time of development of *P. commune* and *P. juniperinum* is there given, for Europe, as from thirteen to fifteen months. This corresponds closely with the observations made in Vermont. It is stated in the article referred to that no moss develops its sporophyte in less than three months, and that some take nearly two years. This shows that there is an opportunity for much interesting work in verifying this study and in finding out the life history of other of our common mosses in this country.

Botanical Laboratory, University of Vermont, Feb. 1, 1904.

NOTICE.

M. Bescherelle, whose death recently was announced in this journal, was interrupted in the preparation of an important bryological work, a "Sylloge" of all the species of mosses described by him. M. Cardot, to whom its completion was entrusted, states that it will contain 450 to 500 pages. and that it will need to be published by *subscription*. It will be possible to print the work at $5.00 a copy, provided that at least *fifty* of the minimum of 140 subscribers necessary to begin the printing can be found in the United States. I desire to announce that I will head this list, and will also receive names of other subscribers, at Winona, Minn.

JOHN M. HOLZINGER.

NOTE.

Bescherelle's proposed "Sylloge," will cost about $3.00, not $5.00 as stated. J. M. H.

SULLIVANT MOSS CHAPTER NOTES.

"A Field Day or Moss Walk" has been proposed for all Sullivant Moss Chapter members and their friends living within ten miles of Boston, Mass. To take place on Saturday afternoon, April 23rd, or. if stormy on Saturday, April 30th. All interested in such an event write to the originator for details. Address, Mr. Walter Gerritson 66 Robbins Street, Waltham, Mass.